

2771-337 RCE3

**Section II. REMARKS**

The pending claims in the application are 40-45, 47, 49, 51, 61, 63 and 64.

**Final Rejection**

According to the MPEP §2163 (III):

"[r]egardless of the outcome of [the written description] determination, Office personnel **must** complete the patentability determination under all the relevant statutory provisions of title 35 of the U.S. Code." (emphasis added)

In addition, MPEP §707.07(g) states that the Examiner "ordinarily should reject each claim on all valid grounds available . . ." to avoid piecemeal examination.

Furthermore, according to 37 CFR §1.113(b), when making a final rejection, "the Examiner **shall** repeat or state all grounds of rejection then considered applicable to the claims in the application, clearly stating the reasons in support thereof" (emphasis added). However,

"where a single previous Office action contains a complete statement of a ground of rejection, the final rejection may refer to such a statement and also should include a rebuttal of any argument's raised in the applicant's reply."

Considered *in toto*, the Examiner **must** complete the patentability determination under the remaining statutory provisions of title 35 of the U.S. Code regardless of the outcome of the written description determination and the Examiner **shall** repeat or state all grounds of rejection when making a final rejection.

The December 23, 2004 Office Action includes only a written description rejection under 35 U.S.C. §112, first paragraph, and is devoid of any other rejections and/or rebuttal of any argument's raised by applicants' in the previous reply. Accordingly, applicants' must conclude that the only issues remaining regarding the patentability of applicants' pending claims are the §112, first paragraph rejections.

**Rejection under 35 U.S.C. §112, First Paragraph, and Traversal Thereof**

2771-337 RCE3

In the December 23, 2004 Office Action, claims 40-45, 47, 49, 51, 61 and 63 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. This rejection is traversed and reconsideration of the patentability of the pending claims is requested in light of the following remarks.

According to the Examiner, support for claims 40 and 61 cannot be found in the original disclosure. Applicants vigorously disagree.

Claim 40 has been amended herein to recite, *inter alia*:

**"A microelectronic device structure comprising:**

**\* \* \***

**a top electrode comprising a top surface and a bottom surface, wherein the bottom surface directly contacts the top surface of the ferroelectric oxide film material and comprises a metal oxide material selected from the group consisting of Ir oxides, Rh oxides, and mixtures thereof, and the top surface of the top electrode consists of a metal is selected from the group consisting of Ir, Rh and mixtures thereof, wherein the transition from the bottom surface of the top electrode to the top surface of the top electrode is increasingly metallic." (emphasis showing added limitation(s))**

Claim 63 has been corresponding amended.

Support for this amendment may be found in the instant specification at page 12, lines 6-17, which recites:

**"The top electrode may be formed of a metallic (non-oxide) material by sputtering in the presence of oxygen. Such technique may use as the oxygen source pure oxygen, ozone, or an oxygen-containing gas such as N<sub>2</sub>O, NO<sub>2</sub>, etc. Reactive sputtering with oxygen being present may be employed to deposit an oxide compound, but the sputtering conditions such as pressure, substrate temperature and deposition rate preferably are adjusted to deposit a sub-oxide or pure metal even when oxygen is present.**

2771-337 RCE3

By such technique, the oxygen present in the deposition environment for formation of the electrode material will tend to prevent a net loss of oxygen in the surface of the ferroelectric or high  $\epsilon$  film material. Once the ferroelectric or high  $\epsilon$  film material surface is covered, a different TE formation process can continue, with the oxygen source being turned off, for example."

In other words, applicants' disclose the formation of a top electrode wherein the top electrode is formed by sputtering a metallic (non-oxide) material in the presence of oxygen, which typically "may be employed to deposit an oxide compound." Notably, applicants describe the preferred deposition of a sub-oxide or pure metal, however, the term "preferably" only describes a preferred embodiment and does not preclude the deposition of a layer comprising a metal oxide (which was disclosed in the same sentence of the disclosure) and/or a metal sub-oxide, on the ferroelectric or high  $\epsilon$  film material surface.

Once the ferroelectric or high  $\epsilon$  film material surface has been covered, applicants expressly disclose that a different top electrode process can continue, for example by continued processing in the absence of oxygen, which inherently will result in the deposition of a metal, as readily understood by one skilled in the art.

Support for the Rh and Rh oxide limitation in claims 40, 61, 63, and new claim 64 can be found in original claim 46, which recited:

"A microelectronic device structure according to claim 40, wherein said top electrode layer comprises a material selected from Pt, Pt oxides, Ir, Ir oxides, Pd, Pd oxides, Rh, Rh oxides, and compatible mixtures and alloys of the foregoing."

It is well settled in the law that "original claims constitute their own description" and as such, "later added claims of similar scope and wording are described thereby." *In re Koller*, 204 U.S.P.Q. 702, 706 (CCPA 1980) (citing *In re Gardner*, 177 USPQ 396 (CCPA 1973)). Thus, the disclosure adequately describes that the top electrode may comprise Rh and Rh oxides, as claimed in claims 40, 61, 63 and 64.

The Examiner is respectfully reminded that to satisfy the written description requirement, a patent specification must describe the claimed invention in sufficient detail that one skilled in the

2771-337 RCE3

art can reasonably conclude that the inventor had possession of the claimed invention at the time of filing. MPEP §2163 (I) (citing *Vas-Cath, Inc. v. Mahurkar*, 19 U.S.P.Q.2d 1111, 1116 (Fed. Cir. 1991)). Furthermore, each claim must be given its broadest reasonable interpretation in light of and consistent with the written description. MPEP §2163 (II)(A)(1) (citing, e.g., *In re Morris*, 44 U.S.P.Q.2d 1023, 1027 (Fed. Cir. 1997)).

Referring to the present case, applicants have adequately described the formation of a top electrode whereby a metal (non-oxide) material is sputtered in the presence of oxygen to deposit a metal oxide material on top of the ferroelectric or high  $\epsilon$  film material surface, followed by processing in the absence of oxygen, which inherently will result in the deposition of metal on top of the metal oxide material. One skilled in the art reading applicants' specification at page 12 can reasonably conclude that the inventor had possession of the claimed invention at the time of filing, which is the proper standard when assessing whether claims satisfy the written description requirement.

Further, giving the claims the broadest reasonable interpretation in light of and consistent with the written description, which is the proper standard, the top electrode may comprise Rh or Rh oxide, as adequately described in the original claims as filed.

Considered *in toto*, applicants' pending claims do satisfy the written description requirement under 35 U.S.C. §112, first paragraph. Withdrawal of the rejection of claims 40-45, 47, 49, 51, 61 and 63 under §112 is respectfully requested.

#### **Petition for Extension of Time/Fees Payable**

One (1) dependent claim has been added herein, bringing the total number of pending claims to twelve (12), two (2) of which are independent. Accordingly, no added claims fee is due at this time.

Applicants hereby petition for a two (2) month extension of time, extending the deadline for responding to the December 23, 2004 Office Action from March 23, 2005 to May 23, 2005.

The fee of \$450.00 specified in 37 CFR §1.17(a)(2) for such two (2) month extension is hereby authorized to be charged in the attached Credit Card Authorization Form. Authorization is also

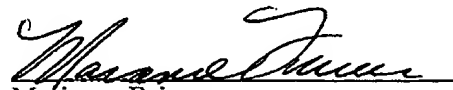
2771-337 RCE3

hereby given to charge any deficiency in applicable fees for this response to Deposit Account No. 08-3284 of Intellectual Property/Technology Law.

**CONCLUSION**

Applicants have satisfied the requirements for patentability. All pending claims are free of the art and fully comply with the requirements of 35 U.S.C. §112. It therefore is requested that Examiner Hu reconsider the patentability of the pending claims, in light of the distinguishing remarks herein, and withdraw all rejections, thereby placing the application in condition for allowance. Notice of the same is earnestly solicited. In the event that any issues remain, Examiner Hu is requested to contact the undersigned attorney at (919) 419-9350 to resolve same.

Respectfully submitted,



Mafianne Fuierer  
Registration No. 39,983  
Attorney for Applicants



Tristan A. Fuierer  
Registration No. 52,926  
Attorney for Applicants

INTELLECTUAL PROPERTY/  
TECHNOLOGY LAW  
P.O. Box 14329  
Research Triangle Park, NC 27709  
Phone: (919) 419-9350  
Fax: (919) 419-9354  
Attorney File No.: 2771-337 RCE (7486)